ditional repellency of the electrical fluid, thus collected by friction on the rubb'd part of the globe's outer ſurface, drives an equal quantity out of the inner ſurface into that non-electric lining, which receiving it, and carrying it away from the rubb'd part into the common maſs, through the axis of the globe and frame of the machine, the new collected electrical fluid can enter and remain in the outer ſurface, and none of it (or a very little) will be received by the prime conductor. As this charg'd part of the globe comes round to the cuſhion again, the outer ſurface delivers its overplus fire into the cuſhion, the oppoſite inner ſurface receiving at the ſame time an equal quantity from the floor. Every electrician knows that a globe wet within will afford little or no fire, but the reaſon has not before been attempted to be given, that I know of.

34. So if a tube lined with a [†] non-electric, be rubb'd, little or no fire is obtained from it. What is collected from the hand in the downward rubbing ſtroke, entering the pores of the glaſs, and driving an equal quantity out of the inner ſurface into the non-electric lining: and the hand in paſſing up to take a ſecond ſtroke, takes out again what had been thrown into the outer ſurface, and then the inner ſurface receives back again what it had given to the non-electric lining. Thus the particles of electrical fluid belonging to the inſide ſurface go in and out of their pores every ſtroke given to the tube. Put a wire into the tube, the inward end in contact with the non-electric lining, ſo it will repreſent the *Leyden* bottle. Let a ſecond perſon touch the wire while you rub, and the fire driven out of the inward ſurface when you give the ſtroke, will paſs through him into the common maſs, and return through him when the inner ſurface reſumes its quantity, and therefore this new kind of *Leyden* bottle cannot ſo be charged. But thus it may: after every ſtroke, before you paſs your hand up to make another, let the ſecond perſon apply his finger to the wire, take the ſpark, and then withdraw his finger; and ſo on till he has drawn a number of ſparks; thus will the inner ſurface be exhauſted, and the outer ſurface charged; then wrap a ſheet of gilt paper cloſe round the outer ſurface, and graſping it in your hand you may receive a ſhock by applying the finger of the other hand to the wire: for now the vacant pores in the inner ſurface reſume their quantity, and the overcharg'd pores in the outer ſurface diſcharge that overplus; the equilibrium being reſtored through your body, which could not be reſtored through the glaſs.[*] If the tube be exhauſted of air, a non electric lining in contact with the wire is not neceſſary; for *in vacuo*, the electrical fire will fly freely from

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[†] Gilt paper, with the gilt face next the glaſs, does well.

[*] See farther experiments, § 15.

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